

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

IMPINJ, INC.,

Plaintiff,

v.

**NXP USA, INC., NXP B.V., and NXP
Semiconductors Netherlands B.V.**

Defendants.

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No. 6:21-cv-00530-ADA

Patent Case

Jury Trial Demanded

SECOND AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Impinj, Inc. (“Impinj”), by and through its undersigned counsel, files this Complaint for Patent Infringement against Defendants NXP USA, Inc., NXP B.V., and NXP Semiconductors Netherlands B.V. (collectively, “NXP” or “Defendants”) and alleges as follows:

NATURE OF THE CASE

1. This is a complex patent infringement action arising from NXP’s copying of Impinj’s patented innovations, its infringement of multiple patents owned by Impinj, and its refusal to cease such infringement.

THE PARTIES

2. Impinj is a Delaware corporation with its principal place of business in Seattle, Washington. Impinj is headquartered at 400 Fairview Ave. N, Suite 1200, Seattle, Washington 98109.

3. Defendant NXP B.V. is a corporation organized and existing under the laws of the Netherlands, with its principal place of business in Eindhoven, Netherlands. NXP B.V. is a direct subsidiary of NXP Semiconductors N.V.

4. Defendant NXP USA, Inc. is a Delaware corporation, with a principal place of business at 6501 William Cannon Drive West, Austin, Texas 78735. NXP USA, Inc. is a subsidiary of NXP Semiconductors N.V. and NXP B.V.

5. Defendant NXP Semiconductors Netherlands B.V. is a company organized and existing under the laws of the Netherlands, with its principal place of business in Eindhoven, Netherlands. NXP Semiconductors Netherlands B.V. is a subsidiary of NXP Semiconductors N.V. and NXP B.V.

6. Collectively, the NXP defendants are affiliated operating entities. Together with other subsidiary entities of the parent, NXP Semiconductors N.V., they form a large multi-national conglomerate that designs, manufactures, and sells integrated circuit products and that has revenues many times Impinj's revenues.

JURISDICTION AND VENUE

7. This action arises under the patent laws of the United States, 35 U.S.C. § 1, *et seq.* This Court's jurisdiction over this action is proper under 28 U.S.C. §§ 1331 (federal question) and 1338 (patent claims).

8. This Court has both general and specific personal jurisdiction over the Defendants consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. Defendant NXP USA, Inc. has headquarters in Austin, Texas where it markets and sells NXP integrated chips, including one or more of the Accused Products. NXP USA, Inc. has, therefore, committed acts of direct infringement in the United States and in this District.

9. Upon information and belief, NXP B.V. and NXP Semiconductors Netherlands B.V. engage in the research, design, manufacture, marketing, sale, offer for sale, and/or provisions

of technical support for one or more of the Accused Products. Upon information and belief, NXP B.V. and NXP Semiconductors Netherlands B.V. sell or facilitate the shipment of accused products to customers in the United States and Texas, including to NXP USA, Inc. and third-party distributors and end customers. NXP B.V. and NXP Semiconductors Netherlands B.V. have thereby committed acts of direct and indirect infringement in the United States and in this District.

10. Upon information and belief, NXP B.V. and NXP Semiconductors Netherlands B.V. further purposefully placed Accused Products into the stream of commerce with the expectation and intent that they will be purchased and used by customers in Texas, including by (a) selling and/or shipping infringing products to NXP USA, Inc. and third-party entities, including into downstream infringing products, with the knowledge and expectation that such products will be imported into the United States and Texas; and (b) directly or indirectly working with other NXP affiliates, distributors, or other entities located in Texas and abroad, to ensure that infringing products (whether as a stand alone integrated chip or as packaged in RFID tags) reach Texas.

11. Each of the Defendants maintains ongoing and systematic contacts within and/or has otherwise purposefully directed activities toward the State of Texas and this District, including but not limited to by (i) conducting infringing acts in the United States and Texas; (ii) regularly conducting or soliciting business, engaging in other persistent courses of conduct, and/or delivering substantial revenue from such goods and services provided to the residents of the United States and Texas; and/or (iii) by placing infringing products into the stream of commerce with the purpose, intent, and knowledge that they will be used by customers in the United States and Texas.

12. The Defendants have thus availed themselves of the benefits and privileges of conducting business in the State of Texas and the exercise by this Court of personal jurisdiction over Defendants would not offend traditional notions of fair play and substantial justice.

13. Venue is proper in this District under 28 U.S.C. § 1400(b) for the claims against NXP USA, Inc. because it has committed acts of infringement and has a regular and established place of business in this district. Venue is proper against the remaining Defendants pursuant to 28 U.S.C. § 1391(c)(3) because they are foreign entities that are not a resident of any judicial district in the United States.

IMPINJ AND ITS PATENT RIGHTS

14. Impinj is a leading provider of RAIN RFID solutions, including hardware and software products that wirelessly connect everyday items to the internet. More specifically, Impinj sells a platform that includes endpoint integrated circuits (“ICs”), reader ICs, readers and gateways that enable wireless connectivity to everyday items, and software that delivers information about those connected items.

15. Impinj was founded in March 2000 based on research done at the California Institute of Technology by Carver Mead and Chris Diorio. Impinj has developed technology in connection with radio frequency identification, known as “RFID.” Impinj has been instrumental in the development of what is now known as RAIN RFID, as well as to the formation of the RAIN RFID global alliance, which promotes the universal adoption of a certain type of RFID that uses ultra-high frequency (“UHF”) radio waves and a communication protocol known as Gen2. From its inception, Impinj has been known as a leading innovator, particularly in the RAIN RFID space. The United States Patent and Trademark Office has acknowledged many of Impinj’s innovations, awarding Impinj more than 250 issued patents and allowed applications.

16. Impinj’s RFID products include Monza RFID tag chips, which were the very first UHF Gen2 RFID tag chips. Impinj’s current Monza R6 IC and M700 chips have important features and/or functionality such as consistently accurate and high-quality data delivery,

improved yield, auto-tuning to optimize readability for the environment and application, and other advanced features that have been recognized by the industry. Impinj also sells Indy reader chips, Speedway readers and gateways, and ItemSense Software.

17. Impinj owns all rights to U.S. Patent Nos. 7,116,240; 7,215,251; 8,665,074; 7,246,751; 7,388,468; 7,733,227; 7,472,835; 10,776,198; and 10,929,734 (collectively, “the Asserted Patents”).

NXP’S ACTS OF INFRINGEMENT

18. NXP makes and sells ICs that are used in RFID tags and compete with Impinj RAIN RFID ICs. NXP’s products include UCODE 7, UCODE 8 and UCODE 9 ICs, which are sold to various customers. The UCODE 8 and UCODE 9 IC was developed, on information and belief, by copying many of the patented inventions in Impinj’s Monza R6 IC chip in an attempt to mimic the quality and functionality of Impinj’s Monza R6 IC.

19. After Impinj became aware of NXP’s UCODE 8 ICs, it advised NXP Semiconductors, by letter dated August 11, 2017, that such ICs, and any associated RFID tags, were likely to infringe many U.S. patents owned by Impinj, which were listed by patent number.

20. In response, NXP by letter dated September 7, 2017, indicated it would need to see a “claim chart” before it would discuss the issues.

21. By letter dated September 14, 2017, Impinj suggested the parties meet in person, and provided a draft non-disclosure agreement to facilitate such discussions.

22. NXP indicated it would not enter into any non-disclosure agreement but reiterated its request for claim charts.

23. Since September 14, 2017, Impinj and NXP have exchanged correspondence relating to the dispute, including correspondence regarding infringement of Impinj’s patents by

NXP's UCODE 7 and UCODE 8 ICs. Impinj provided NXP, among other things, claim charts detailing how NXP infringes seven of the nine patents asserted in this Complaint. The relevant claim charts are attached as Exhibits 10 and 11 to this Complaint.

24. Despite such correspondence and discussions, NXP refused to cease its infringement of Impinj patents. In addition, NXP has recently begun using, inducing the use of, and offering for sale the UCODE 9 IC in the United States. On information and belief, the UCODE 9 IC has the same relevant structures and functionality as the UCODE 8 IC in connection with the attached claim charts, and leads to infringement for the same reasons.

CALIFORNIA LITIGATION

25. Impinj was thus forced to file a lawsuit against NXP to protect its patent rights in the Northern District of California on June 6, 2019: *Impinj, Inc. v. NXP USA, Inc.*, Case No. 5:19-cv-03161-NC ("California Litigation"). NXP USA, Inc. was served with the Complaint on June 7, 2019. In the California Litigation, which is currently pending, Impinj originally sued NXP USA, Inc. for infringement of twenty-six patents.

26. In the California litigation, NXP USA, Inc. complained about the number of patents being asserted and, in response to an order from the Court, Impinj removed all but eight patents, seven of which are re-asserted below.

WASHINGTON LITIGATION

27. Four months after Impinj filed the California case, NXP USA, Inc. and NXP B.V., in retaliation for Impinj's California lawsuit, sued Impinj in the District of Delaware alleging infringement of eight patents, in a case styled as *NXP USA, Inc., et al. v. Impinj, Inc.*, Case No. 1:19-cv-01875-RGA. Impinj successfully moved to transfer the case to the Western District of Washington under 28 U.S.C. § 1404 for the convenience of the parties and witnesses. *See NXP*

USA, Inc., et al. v. Impinj, Inc., Case No. 2:20-cv-01503-RSM-MAT (“Washington Litigation”). On December 12, 2019, while the motion to transfer was pending, Impinj filed its Answer, denying infringement of each of the asserted patents and asserting invalidity and noninfringement among its affirmative defenses. Impinj did not file a counterclaim at that time because, in part, the patents at issue were already part of the California case and therefore could not have been asserted in the instant case.

28. Shortly after the case was transferred, Impinj sought leave to file an amended answer with counterclaims asserting eight patents, including six of the Asserted Patents in this case. In response to NXP’s objections, the court in the Washington case denied Impinj’s request and the Washington case is proceeding only with the NXP patents.

COUNT I: NXP’S INFRINGEMENT OF U.S. PATENT NO. 7,246,751

29. Impinj owns U.S. Patent No. 7,246,751 (“the ’751 Patent”), which is directed to an IC for an RFID tag with a modulator and an inventive processing block for deriving a BP number for operating the modulator. A copy of the ’751 Patent is attached hereto as Exhibit 1.

30. Claim 1 of the ’751 Patent reads as follows:

1. A circuit for a radio frequency identification (RFID) tag, comprising:

a demodulator that is arranged to demodulate a waveform of a wirelessly received wave;

a processing block that includes:

a counter configured to determine an L-number from a duration of a calibration feature of the waveform, and

a combining circuit configured to combine a first nonzero version of the L-number with a second nonzero version of the L-number so as to derive a BP-number such that the derived BP-number substantially equals the L-number divided by a preset non-integer divide ratio; and

a modulator that is arranged to modulate a second wave with encoded symbols that have a periodicity determined from the BP-number.

31. Claim 9 of the '751 Patent reads as follows:

9. The circuit of claim 1, wherein

the combining circuit comprises an adder operable to add the first version to the second version.

32. Claim 12 of the '751 Patent reads as follows:

12. The circuit of claim 1, wherein

the processing block further comprises an offset adder operable to add an offset to one of the first version, the second version, and the BP-number.

33. Claim 38 of the '751 Patent reads as follows:

38. A circuit for a radio frequency identification (RFID) tag that is responsive to an RFID reader, the RFID tag comprising:

a means for demodulating a waveform from a first wireless wave received from the reader;

a means for determining an L-number from a duration of a calibration feature of the waveform;

a means for deriving a BP-number by combining a first nonzero version of the L-number with a second nonzero version of the L-number such that the derived BP-number substantially equals the L-number divided by a preset non-integer divide ratio; and

a means for modulating a second wave that is to be received by the reader by encoding symbols with a periodicity determined from the BP-number.

34. NXP's UCODE 7 and UCODE 8 ICs have each of the elements of claims 1, 9, 12 and 38 of the '751 Patent, including the recited processing block.

35. NXP has directly infringed the '751 Patent, including at least claims 9, 12, and 38 of the patent, by making, importing, selling and offering for sale its UCODE 7 and UCODE 8 ICs.

36. NXP has indirectly infringed the '751 Patent by selling the accused ICs outside of the United States, knowing of the '751 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

37. NXP has continued its infringing activities despite knowledge of the '751 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

38. Exemplary claim charts demonstrating NXP's infringement of the '751 Patent are included in Exhibits 10 and 11. On information and belief, the claims read on the UCODE 9 IC for the same reasons as they read on the UCODE 8 IC.

COUNT II: NXP'S INFRINGEMENT OF U.S. PATENT NO. 7,116,240

39. Impinj owns U.S. Patent No. 7,116,240 ("the '240 Patent"), which is directed to an RFID transponder with an inventive circuit design. A copy of the '240 Patent is attached hereto as Exhibit 2.

40. Claim 1 of the '240 Patent reads as follows:

1. A Radio-Frequency Identification (RFID) transponder including:

a capacitor;

a digital element coupled to the capacitor to receive a voltage of the capacitor; and

a charge and leakage circuit including an NMOS device having a source, a drain and a gate, the source node of the NMOS device being coupled to the capacitor and the drain node of the NMOS device being coupled to a first CMOS inverter,

wherein the first CMOS inverter is powered by a regulated supply voltage such that the voltage on the capacitor is substantially not dependent on the forward voltage drop of the NMOS device.

41. Claim 2 of the '240 Patent reads as follows:

2. The RFID transponder of claim 1, wherein the regulated supply voltage is lower than VDD.

42. Claim 8 of the '240 Patent reads as follows:

8. The RFID transponder of claim 1, including an output voltage node coupled to the digital element, the output voltage node indicating an identification flag state.

43. NXP's UCODE 8 IC has each of the elements of claims 1, 2, and 8, of the '240 Patent, including the recited circuit.

44. NXP has indirectly infringed the '240 Patent, including at least claims 2 and 8 of the '240 Patent, under 35 U.S.C. §§ 271(b) and (c), by supplying UCODE 8 ICs for inclusion in transponders with knowledge of the '240 Patent. NXP's UCODE 8 ICs have no substantial noninfringing use, and NXP has induced inlay manufacturers and others to incorporate UCODE 8 ICs into RFID transponders so that they practice the claims.

45. NXP has also indirectly infringed the '240 Patent by selling the accused ICs outside of the United States, knowing of the '240 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

46. NXP has continued its infringing activities despite knowledge of the '240 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

47. An exemplary claim chart demonstrating NXP's infringement of the '240 Patent is included in Exhibit 11. On information and belief, the claims read on the UCODE 9 IC for the same reasons they read on the UCODE 8 IC.

COUNT III: NXP'S INFRINGEMENT OF U.S. PATENT NO. 7,388,468

48. Impinj owns U.S. Patent No. 7,388,468 ("the '468 Patent"), which is directed to an RFID tag with an inventive oscillator calibration design. A copy of the '468 Patent is attached hereto as Exhibit 3.

49. Claim 1 of the '468 Patent reads as follows:

1. A radio-frequency identification (RFID) tag including:

a non-volatile memory to store an oscillator calibration value received from a calibration module;

an oscillator, coupled to the non-volatile memory, to receive the oscillator calibration value from the non-volatile memory, and to generate an oscillation frequency signal within the RFID tag utilizing the oscillator calibration value;

a tag controller to generate a command signal within the RFID tag, the command signal being based on command data received at the RFID tag in a received radio-frequency signal from an RFID reader; and

a modulator to backscatter modulate a transmitted radio-frequency signal in accordance with both the oscillation frequency signal and the command signal.

50. NXP's UCODE 7 and UCODE 8 ICs have each of the elements of claim 1 of the '468 Patent, including the recited oscillator, tag controller and modulator.

51. NXP has indirectly infringed the '468 Patent, including at least claim 1 of the '468 Patent, under 35 U.S.C. §§ 271(b) and (c), by supplying UCODE 7 and UCODE 8 ICs for inclusion in RFID tags with knowledge of the '468 Patent. NXP's UCODE 7 and UCODE 8 ICs have no substantial noninfringing use, and NXP has induced inlay manufacturers and others to incorporate UCODE 7 and UCODE 8 ICs into RFID tags so that they practice the claims.

52. NXP has also indirectly infringed the '468 Patent by selling the accused ICs outside of the United States, knowing of the '468 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

53. NXP has continued its infringing activities despite knowledge of the '468 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

54. Exemplary claim charts demonstrating NXP's infringement of the '468 Patent are included in Exhibits 10 and 11. On information and belief, the claims read on the UCODE 9 IC for the same reasons they read on the UCODE 8 IC.

COUNT IV: NXP'S INFRINGEMENT OF U.S. PATENT NO. 7,215,251

55. Impinj owns U.S. Patent No. 7,215,251 ("the '251 Patent"), which is directed to an RFID transponder with an inventive flag circuit. A copy of the '251 Patent is attached hereto as Exhibit 4.

56. Claim 8 of the '251 Patent reads as follows:

8. A Radio-Frequency Identification (RFID) transponder including:

an identification flag circuit to maintain an RFID transponder state, the identification flag circuit including a first capacitor and a digital element coupled to the first capacitor to receive a voltage of the first capacitor; and

a discharge circuit to drain the first capacitor via a discharge current that is distinct from a semiconductor leakage current, wherein the discharge circuit includes:

a discharge circuit capacitor to store voltage; and

a transconductor circuit coupled to the discharge circuit capacitor to convert voltage stored on a discharge circuit capacitor into the discharge current.

57. Claim 9 of the '251 Patent reads as follows:

9. The RFID transponder of claim 8, wherein the transconductor circuit includes:

a first transistor having a gate, a source and a drain, the gate coupled to the discharge circuit capacitor; and

a second transistor having a gate, a source and a drain the gate coupled to the discharge circuit capacitor.

58. Claim 10 of the '251 Patent reads as follows:

10. The RFID transponder of claim 9, wherein the discharge circuit capacitor is to store the gate voltage of the first transistor and the gate voltage of the second transistor responsive to detection of power loss on the RFID transponder.

59. Claim 14 of the '251 Patent reads as follows:

14. A Radio-Frequency Identification (RFID) transponder including:

an identification flag circuit to maintain an RFID transponder state, the identification flag circuit including a first capacitor and a digital element coupled to the first capacitor to receive a voltage of the first capacitor;

a discharge circuit to drain the first capacitor via a discharge current that is distinct from a semiconductor leakage current; and

a digital non-volatile memory to control accuracy of the discharge current.

60. NXP's UCODE 7 and UCODE 8 ICs have each of the elements of claims 8, 9, 10 and 14 of the '251 Patent, including the recited identification flag circuit and discharge circuit.

61. NXP has indirectly infringed the '251 Patent, including at least claims 8 and 14 of the '251 Patent, under 35 U.S.C. §§ 271(b) and (c), by supplying UCODE 7 and UCODE 8 ICs for inclusion in transponders with knowledge of the '251 Patent. NXP's UCODE 7 and UCODE 8 ICs have no substantial noninfringing use, and NXP has induced inlay manufacturers and others to incorporate UCODE 7 and UCODE 8 ICs into RFID transponders so that they practice the claims.

62. NXP has indirectly infringed the '251 Patent by selling the accused ICs outside of the United States, knowing of the '251 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

63. NXP has continued its infringing activities despite knowledge of the '251 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

64. Exemplary claim charts demonstrating NXP's infringement of the '251 Patent are included in Exhibits 10 and 11. On information and belief, the claims read on the UCODE 9 IC for the same reasons they read on the UCODE 8 IC.

COUNT V: NXP'S INFRINGEMENT OF U.S. PATENT NO. 8,665,074

65. Impinj owns U.S. Patent No. 8,665,074 ("the '074 Patent"), which is directed to an IC for an RFID tag with an inventive processing block that permits alternative behaviors, even hiding a portion of the memory of the RFID tag for better security. A copy of the '074 Patent is attached hereto as Exhibit 5.

66. Claim 1 of the '074 Patent reads as follows:

1. A Radio Frequency Identification (RFID) tag integrated circuit (IC) comprising:

a memory storing an identifier; and

a processing block configurable to:

operate in a first behavior state;

in response to receiving a first behavior-change command with a power level exceeding a threshold, transition from the first behavior state to a second behavior state, and not transition if the power level does not exceed the threshold; and

when operating in the second behavior state be configurable to subsequently transition back to the first behavior state; wherein

the first behavior state is one of a public behavior state exposing only a portion of the identifier and a private behavior state exposing the entire identifier; and the second behavior state is the other one of the public behavior state exposing only a portion of the identifier and the private behavior state exposing the entire identifier.

67. Claim 4 of the '074 Patent reads as follows:

4. The RFID tag IC of claim 1, wherein the processing block is further configured to temporarily transition from the first behavior state to the second behavior state, and to transition back upon losing power.

68. Claim 7 of the '074 Patent reads as follows:

7. The RFID tag IC of claim 1, wherein the processing block is further configured to only transition from the first behavior state to the second behavior state if the first behavior-change command is received in a secured protocol state.

69. NXP's UCODE 7 and UCODE 8 ICs have each of the elements of claim 1 of the '074 Patent, including the recited memory and processing block.

70. NXP's UCODE 8 IC has each of the elements of claims 1, 4, and 7 of the '074 Patent, including the recited processing block.

71. NXP has directly infringed the '074 Patent, including at least claims 1, 4, and 7 of the '074 Patent, by making, importing, selling and offering for sale its UCODE 7 and UCODE 8 ICs.

72. NXP has indirectly infringed the '074 Patent by selling the accused ICs outside of the United States, knowing of the '074 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

73. NXP has continued its infringing activities despite knowledge of the '074 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

74. Exemplary claim charts demonstrating NXP's infringement of the '074 Patent are included in Exhibits 10 and 11. On information and belief, the claims read on the UCODE 9 IC for the same reasons they read on the UCODE 8 IC.

COUNT VI: NXP'S INFRINGEMENT OF U.S. PATENT NO. 7,472,835

75. Impinj owns U.S. Patent No. 7,472,835 ("the '835 Patent"), which is directed to a circuit for an RFID tag, including an inventive structure for demodulating waveforms that encode a gross number and a divide ratio. A copy of the '835 Patent is attached hereto as Exhibit 6.

76. Claim 1 of the '835 Patent reads as follows:

1. An RFID tag comprising:

a demodulator to demodulate waveforms from an RFID reader that encode a gross number and a divide ratio, the gross number being expressed in terms of bits;

a processor to determine a result by dividing the gross number by the divide ratio and adding an adjustment, in which the dividing takes place by discarding at least one of the bits; and

a modulator to backscatter a tag waveform that includes symbols using a symbol period determined from the result.

77. Claim 20 of the '835 Patent reads as follows:

20. A device comprising:

means for receiving waveforms from an RFID reader;

means for determining a gross number and a divide ratio from the waveforms, the gross number being expressed in terms of bits;

means for generating a result by dividing the gross number by the divide ratio and adding an adjustment, in which the dividing takes place by discarding at least one of the bits; and

means for backscattering a tag waveform that includes symbols using a symbol period determined from the result.

78. Claim 36 of the '835 Patent reads as follows:

36. A method for an RFID tag comprising:

receiving waveforms from an RFID reader;

determining a gross number and a divide ratio from the waveforms, the gross number being expressed in terms of bits;

generating a result by dividing the gross number by the divide ratio and adding an adjustment in which the dividing takes place by discarding at least one of the bits; and

backscattering a tag waveform that includes symbols using a symbol period determined from the result.

79. Claim 52 of the '835 Patent reads as follows:

52. A circuit for an RFID tag having an antenna, comprising:

a demodulator to demodulate waveforms by the antenna that encode a gross number and a divide ratio, the gross number being expressed in terms of bits;

a processor to determine a result by dividing the gross number by the divide ratio and adding an adjustment, in which the dividing takes place by discarding at least one of the bits; and

a modulator to backscatter via the antenna a tag waveform that includes symbols using a symbol period determined from the result.

80. NXP's UCODE 7 and UCODE 8 ICs have each of the elements of claims 1 and 20 of the '835 Patent when inserted into an RFID tag, perform each of the steps of claim 36 when used in an RFID tag, and have each of the elements of claim 52 of the '835 Patent, including the recited demodulator, processor and modulator.

81. NXP has directly infringed the '835 Patent, including at least claim 52 of the '835 Patent, by making, importing, selling and offering for sale its UCODE 7 and UCODE 8 ICs.

82. NXP has indirectly infringed the '835 Patent, including claims 1, 20 and 36 of the '835 patent, under 35 U.S.C. §§ 271(b) and (c), by supplying its UCODE 7 and UCODE 8 ICs to others for use in RFID tags. The UCODE 7 and UCODE 8 ICs have no substantial noninfringing use, and NXP has induced its customers to use the UCODE 7 and UCODE 8 ICs in a manner that

leads the tags incorporating UCODE 7 and UCODE 8 ICs to practice claims 1, 20 and 36 of the '835 Patent.

83. NXP has also indirectly infringed the '835 Patent by selling the accused ICs outside of the United States, knowing of the '835 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

84. NXP has continued its infringing activities despite knowledge of the '835 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

85. Exemplary claim charts demonstrating NXP's infringement of the '835 Patent are included in Exhibits 10 and 11. On information and belief, the claims read on the UCODE 9 IC for the same reasons they read on the UCODE 8 IC.

COUNT VII: NXP'S INFRINGEMENT OF U.S. PATENT NO. 7,733,227

86. Impinj owns U.S. Patent No. 7,733,227 ("the '227 Patent"), which is directed to a circuit for an RFID tag that aborts the write function if sufficient power is not achieved. A copy of the '227 Patent is attached hereto as Exhibit 7.

87. Claim 38 of the '227 Patent reads as follows:

38. A Radio Frequency Identification (RFID) circuit for use in an RFID tag, comprising:

a first circuit arranged to receive a command associated with a tag operation from an RFID reader; and

a second circuit arranged to determine, responsive to the received command, whether a power adequacy condition is met for performing the tag operation, and if so to perform the tag operation in response to the received command, else not to perform the tag operation.

88. Claim 44 of the '227 Patent reads as follows:

44. The circuit of claim 38, in which if the power adequacy condition is not met, the first circuit is arranged to perform one of: setting a flag and changing a state of the tag.

89. NXP's UCODE 7 and UCODE 8 ICs have each of the elements of claims 38 and 44 of the '227 Patent when inserted into an RFID tag, including a first and a second circuit and a flag.

90. NXP has directly infringed the '227 Patent, including at least claim 44 of the '227 Patent, by making, importing, selling and offering for sale its UCODE 7 and UCODE 8 ICs.

91. NXP has indirectly infringed the '227 Patent, including claims 38 and 44, under 35 U.S.C. §§ 271(b) and (c), by supplying its UCODE 7 and UCODE 8 ICs to others for use in RFID tags. The UCODE 7 and UCODE 8 ICs have no substantial noninfringing use, and NXP has induced its customers to use the UCODE 7 and UCODE 8 ICs in a manner that leads the tags incorporating UCODE 7 and UCODE 8 ICs to practice claims 38 and 44 of the '227 Patent.

92. NXP has also indirectly infringed the '227 Patent by selling the accused ICs outside of the United States, knowing of the '227 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

93. NXP has continued its infringing activities despite knowledge of the '227 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

94. Exemplary claim charts demonstrating NXP's infringement of the '227 Patent are included in Exhibits 10 and 11. On information and belief, the claims read on the UCODE 9 IC for the same reasons they read on the UCODE 8 IC.

COUNT VIII: NXP'S INFRINGEMENT OF U.S. PATENT NO. 10,776,198

95. Impinj owns U.S. Patent No. 10,776,198 (“the ’198 Patent”), which is directed to a circuit for an RFID tag that checks for a corrupted stored identifier. A copy of the ’198 Patent is attached hereto as Exhibit 8.

96. Claim 1 of the ’198 Patent reads as follows:

1. A Radio Frequency Identification (RFID) integrated circuit (IC) configured to reconstruct corrupted identifiers, the IC comprising:

a memory storing a first identifier and a check code, the check code used to check a correctness of the first identifier; and

a processing block coupled to the memory and configured to:

retrieve the first identifier and the check code;

determine that the check code does not correspond to the first identifier and that the first identifier is therefore corrupted;

write an error code to the memory;

reconstruct a correct identifier from at least the first identifier and the check code; and

respond to an identifier-requesting command by transmitting a reply to the command including the correct identifier.

97. Claim 8 of the ’198 Patent reads as follows:

8. A Radio Frequency Identification (RFID) integrated circuit (IC) associated with a correct identifier and configured to indicate identifier corruption, the IC comprising:

a memory storing a first identifier and a check code, the check code used to check a whether the first identifier is the correct identifier or is corrupted; and

a processing block coupled to the memory and configured to:

retrieve the first identifier and the check code;

determine that the check code does not correspond to the first identifier and that the first identifier is therefore corrupted;

write a corruption code to the memory indicating that the first identifier is corrupted; and

respond to an identifier-requesting command by transmitting a reply to the command including the corrupted first identifier.

98. Claim 15 of the '198 Patent reads as follows:

15. A Radio Frequency Identification (RFID) integrated circuit (IC) configured to check for identifier corruption, the IC comprising:

a memory storing a first identifier and a check code, the check code used to check a correctness of the first identifier; and

a processing block coupled to the memory and configured to:

retrieve the first identifier and the check code;

determine that the check code does not correspond to the first identifier and that the first identifier is therefore a corrupted identifier;

attempt to reconstruct a correct identifier from at least the corrupted identifier and the check code;

if the reconstruction attempt succeeds:

write an error code to the memory; and

respond to an identifier-requesting command with the corrupted first identifier.

99. NXP's UCODE 7 and UCODE 8 ICs have each of the elements of claims 1, 8 and 15 of the '198 Patent when inserted into an RFID tag, including an identifier and a check code.

100. NXP has directly infringed the '198 Patent, including at least claim 1 of the '198 Patent, by making, importing, selling and offering for sale its UCODE 7 and UCODE 8 ICs.

101. NXP has indirectly infringed the '198 Patent, including claims 1, 8 and 15, under 35 U.S.C. §§ 271(b) and (c), by supplying its UCODE 7 and UCODE 8 ICs to others for use in RFID tags. The UCODE 7 and UCODE 8 ICs have no substantial noninfringing use, and NXP has

induced its customers to use the UCODE 7 and UCODE 8 ICs in a manner that leads the tags incorporating UCODE 7 and UCODE 8 ICs to practice claims 1, 8 and 15 of the '198 Patent.

102. NXP has also indirectly infringed the '198 Patent by selling the accused ICs outside of the United States, knowing of the '198 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

103. NXP has continued its infringing activities despite knowledge of the '198 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

104. An exemplary claim chart demonstrating NXP's infringement of the '198 Patent is attached as Exhibit 12. On information and belief, the claims read on the UCODE 9 IC for the same reasons they read on the UCODE 8 IC.

COUNT IX: NXP'S INFRINGEMENT OF U.S. PATENT NO. 10,929,734

105. Impinj owns U.S. Patent No. 10,929,734 ("the '734 Patent"), which is directed to a circuit for an RFID tag that automatically tunes the variable impedance. A copy of the '734 Patent is attached hereto as Exhibit 9.

106. Claim 1 of the '734 Patent reads as follows:

1. A Radio Frequency Identification (RFID) integrated circuit (IC) comprising:

an antenna port configured to be coupled to an antenna and a variable impedance;

a first oscillator configured to provide a first clock frequency;

a second oscillator configured to provide a second clock frequency; and

a tuning circuit coupled to and configured to tune the variable impedance, wherein the IC is configured to:

determine that tuning of the variable impedance is to occur;

select the first oscillator to use for the tuning;

extract a first power from an RF wave incident on the antenna insufficient for the IC to fully operate;

cause the tuning circuit to tune, using the first clock frequency from the first oscillator, the variable impedance to increase the power extracted from the RF wave; and

after the tuning circuit tunes the variable impedance:

extract a second power from the RF wave sufficient for the IC to fully operate;

select the second oscillator to use for IC operation; and

operate using the second clock frequency from the second oscillator.

107. NXP's UCODE 7 and UCODE 8 ICs have each of the elements of claim 1 of the '734 Patent when inserted into an RFID tag, including two oscillators and a tuning circuit.

108. NXP has directly infringed the '734 Patent, including at least claim 1 of the '734 Patent, by making, importing, selling and offering for sale its UCODE 7 and UCODE 8 ICs.

109. NXP has indirectly infringed the '734 Patent, including claim 1, under 35 U.S.C. §§ 271(b) and (c), by supplying its UCODE 7 and UCODE 8 ICs to others for use in RFID tags. The UCODE 7 and UCODE 8 ICs have no substantial noninfringing use, and NXP has induced its customers to use the UCODE 7 and UCODE 8 ICs in a manner that leads the tags incorporating UCODE 7 and UCODE 8 ICs to practice claim 1 of the '734 Patent.

110. NXP has also indirectly infringed the '734 Patent by selling the accused ICs outside of the United States, knowing of the '734 Patent, and knowing such ICs would be brought into the United States either as ICs or as packaged in RFID tags.

111. NXP has continued its infringing activities despite knowledge of the '734 Patent (including knowledge from correspondence with Impinj), and such infringement is egregious and willful.

112. An exemplary claim chart demonstrating NXP's infringement of the '734 Patent is attached as Exhibit 13. On information and belief, the claims read on the UCODE 9 IC for the same reasons they read on the UCODE 8 IC.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Impinj demands a trial by jury on all issues triable of right by a jury.

REQUEST FOR RELIEF

WHEREFORE, Impinj requests the following relief:

1. A judgment that NXP has infringed one or more claims of each of the Asserted Patents, and that such infringement is willful;
2. A preliminary and permanent injunction enjoining NXP and its officers, agents, servants, employees, attorneys and any other persons who are in active concert or participation with such persons, from making, selling, using, offering for sale or importing its UCODE 7 IC, UCODE 8 IC, UCODE 9 IC, or any other IC that is not colorably different or inducing infringement by selling such ICs outside the United States with knowledge of the asserted patents and knowing that the ICs will be brought and used in the United States;
3. An award of damages, including lost profits, but no less than a reasonable royalty under 35 U.S.C. § 284 arising from such infringement;
4. Increased damages pursuant to 35 U.S.C. § 285 or as otherwise permitted by law;

5. An award of attorneys' fees and costs pursuant to 35 U.S.C. § 285 or as otherwise permitted by law; and

6. For such other relief as the Court deems just and proper.

Dated: July 12, 2022

Respectfully submitted,

/s/ Jose C. Villarreal

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CERTIFICATE OF SERVICE

I hereby certify that, on July 12, 2022, I electronically filed the foregoing with the Clerk of Court using the CM/ECF system, which will send notification of such filing to all counsel of record.

/s/ Jose C. Villarreal

Jose C. Villarreal